AMENDMENT TO THE CLAIMS

IN THE CLAIMS:

Claim 1 (original):

A method for collecting, assimilating and utilizing data from a variety of sources for determining the regulatory requirements and for generating the related compliance reports for an industry, the method comprising the steps of:

a. collecting external data required for compliance requirements of a compliance model;
b. collecting data from a user;
c. assimilating the external data and the user data in a processor to determine compliance by the user;
d. automatically generating a report unique to the user data containing required compliance information.

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Claim 2 (original):

The method of claim 1, wherein the external data is public data.

Claim 3 (original):

The method of claim 1, wherein the compliance model is a government agency compliance requirement.

Claim 4 (original):

The method of claim 1, further including the step of electronically submitting the generated report to a relevant agency.

Claim 5 (currently amended):

The method of <u>claim 2</u> ~~claim 1~~, wherein the collected public data is industry specific.

Claim 6 (original):

The method of claim 1, wherein the collected user data is facility specific.

Claim 7 (currently amended):

The method of <u>claim 1</u> ~~claim 6~~, wherein the collected user data is equipment specific.

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Claim 8 (currently amended):

The method of <u>claim 1</u> ~~claim 6~~, wherein the collected user data is location specific.

Claim 9 (currently amended):

The method of <u>claim 2</u> ~~claim 1~~, further including the step of creating a library of available data from the collected public data and non-confidential portions of the collected user data.

Claim 10 (currently amended):

The method of <u>claim 2</u> ~~claim 1~~, further including the steps of linking the public data to on-line databases and importing data from said databases into the collected public data.

Claim 11 (currently amended):

The method of claim 2 ~~claim 1~~, wherein there is further included a mathematical database and wherein data in the collected public data and in the collected user data is imported into the mathematical database for calculating compliance data in the generation of a report.

Claim 12 (original):

The method of claim 11, wherein the mathematical database is an air module database for calculating hydrocarbon emissions from a crude oil storage tank.

Claim 13 (original):

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The method of claim 12, wherein the mathematical database includes the following primary calculation formulas for calculating hydrocarbon emissions from storage tanks:

$$L_T = L_S + L_W$$

$$L_S = 365 V_V\, W_V\, K_E\, K_S$$

$$V_V = \frac{\Pi}{4} D^2 (H_S - H_L + H_{RO})$$

$$W_V = \frac{M_V P_{VA}}{R T_{LA}}$$

$$T_{LA} = .044 T_{AA} + 0.56 T_B + 0.0079 aI$$

$$T_B = T_{AA} + 6a - 1$$

$$K_E = \frac{dT_V}{T_{LA}} + \frac{dP_V - dP_B}{P_A - P_{VA}}$$

$$dT_V = .072dT_A + 0.028I$$

$$K_S = \frac{1}{1 + 0.053P_{VA}H_{VO}}$$

$$H_{VO} = H_S - H_L + H_{RO}$$

$$L_W = 0.0010M_VP_{VA}QK_NK_P$$

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Symbol	Name	Description	Type	Source
Π	Pi	Constant dimensionless factor = 3.1415	Numeric	Mathematical constant (given)
a	Tank paint solar absorbence factor	Dimensionless empirical factor which has been established through experience.	Numeric	Rference from Table 12.3-7 in AP42 reference and based on color. Stored in System Library.
D	Tank diameter	Cross sectional linear measurement of the cylindrical tank. Units = linear	Numeric	Client data stored in System Database
H_L	Liquid Height	Average daily tank gauge reading which shows how much is in the tank. Units = linear (e.g. ft)	Numeric	Client data stored in System Database
H_{RO}	Roof Outage	Linear measurement of tank roof height measured from the vertical edge of the tank shell to the top of the dome or coned roof. Units = linear (l)	Numeric	Client data stored in System Database
H_S	Shell Height	Linear measurement of tank height excluding the height of the roof section of the tank. Units = linear (l)	Numeric	Client data stored in System Database
H_{VO}	Vapor Space Outage	The height of the inside tank space minus the liquid level in linear units, e.g. ft	Numeric	Result of Equation 3.1.10
I	Daily solar insolation factor	Empirical factor based on tank materials and conditions. Units = BTU / ft^3 – day	Numeric	Refenced from Table 12.3-6 in AP42 reference. Stored in System Library.

K_E	Vapor space expansion factor	Dimensionless empirical factor used to calculate standing losses in Equation (1)	Numeric	Result of Equation 3.1.7
K_N	Turnover factor	Dimensionless empirical factor	Numeric	Taken from Figure 12.3-6 in AP42 reference. Stored in System Library.
K_P	Working loss product factor	Dimensionless empirical factor which is product specific, i.e. 0.75 for crude oil and 1.0 for all other organic liquids.	Numeric	Included by reference. Stored in System Library.
K_S	Vented Vapor Saturation Factor	Dimensionless factor used to calculate the Standing Storage Losses.	Numeric	Result of Equation 3.1.9.
L_S	Standing Losses	Hydrocarbon air emissions from crude and condensate above ground storage tanks that are given off while the tank is standing idle (not filling and emptying) and contains some quantity of fluid. Measured in lbs/hr, lbs/day, and tons/year.	Numeric	Result of Equation 3.1.2
L_T	Total losses	Hydrocarbon air emissions from crude and condensate above ground storage tanks that are a sum of the working and standing losses as described above. Measured in lbs/hr, lbs/day, and tons/year.	Numeric	Result of Equation 3.1.1
L_W	Working Losses	Hydrocarbon air emissions from crude and condensate above ground storage tanks that are given off during operations (filling and emptying) and contains some quantity of fluid. Measured in lbs/hr, lbs/day, and tons/year.	Numeric	Result of Equation 3.1.11
M_V	Vapor Molecular Weight	Molecular weight or the weight of an Avogadro's number of molecules of the gases in the vapor space volume. Units = mass/mole (e.g. lb/lb mole)	Numeric	Taken from reference tables in the AP42 reference. Stored in System Library.
P_A	Atmospheric pressure	Standard ambient atmospheric pressure as measured via barometer, e.g. 14.7 psia	Numeric	Constant by reference. Stored in System Library.

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dP_B	Breather vent pressure setting range.	The range in pressures at which the tank vent or hatch will relieve under the pressure of its contents.	Numeric	Client data stored in System Database. Otherwise the program will provide a default value if the user chooses.
dP_V	Daily vapor pressure range	The range (or change) in the vapor pressure caused by the variance in maximum and minimum daily ambient temperatures. Provided by reference in pressure measurements.	Numeric	Derived from Figure 12.3-1 and Table 12.3-6 in AP42 reference. Stored in System Library.
P_{VA}	Vapor pressure	True vapor pressure of the liquid at the average liquid surface temperature. Units = force / unit area (f/l^2) ($lbs/inch^2$)	Numeric	Vapor sample data stored in System Database or table in AP42 reference stored in System Library.
Q	Annual net production through-put	The annual volume of hydrocarbons, e.g. crude oil, that is stored in the tank being considered. This figure is taken from actual lease production volumes. Volumetric units, e.g. bbls	Numeric	Client data stored in System Database
R	Ideal Gas Constant	Ideal gas constant calculated as (standard atmospheric pressure – ideal molar volume of gas / mol – standard temperature) (e.g. psia – ft^3 / lb-mole - °R (Rankine) = 10.731)	Numeric	Calculated from constants / Almost always used in USA as 10.731. Stored in System Library.
dT_A	Daily average temperature range (°R , °K)	The difference between daily minimum and maximum temperatures taken from Table 12.3-6 as determined by regional location.	Numeric	Taken from Table 12.3-6 in AP42 reference. Stored in System Library.
T_{AA}	Daily average ambient temperature	Average of daily maximum and minimum ambient temperatures. Measured in °R or °K.	Numeric	Table 12.3 in AP42 reference. Stored in System Library.
T_B	Liquid bulk temperature	Liquid bulk temperature at standard temp Units = °R or °K	Numeric	Result of Equation 3.1.6
T_{LA}	Daily average liquid surface temperature	The average temperature measured at the surface of the liquid in the tank. In this case the temperature is calculated from ambient temperatures rather than measured. Units = °R (Rankine)	Numeric	Result of Equation 3.1.5

dT_V	Daily vapor temperature range	The daily range in temperature of the vapor in the vapor space of the tank as described above; calculated.	Numeric	Result of Equation 3.1.8
V_V	Vapor space volume	Volumetric calculation of the average amount of space in the tank (overhead) that is not occupied by liquids. Measurement = l^3	Numeric	Result of Equation 3.1.3
W_V	Vapor density	Calculated densities of the gases (vapors) in the vapor space calculated in equation (1)(a). Units = mass/unit volume (m/l^3) (e.g. lb/ft^3)	Numeric	Result of Equation 3.1.4

Claim 14 (original):

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The method of claim 12, wherein the mathematical database includes the following primary calculation formulas for calculating hydrocarbon emissions from internal combustion engines:

$$\sum_{i=1 \text{ to } n} \frac{EF_i g}{1 \text{ hp hr}} \times \frac{\text{Rated hp}_i}{1} \times \frac{24 \text{ hrs}}{\text{day}} \times \frac{365 \text{ days}}{\text{year}} \times \frac{1 \text{ lb}}{453.6 \text{ g}} \times \frac{1 \text{ ton}}{2000 \text{ lbs}} = \frac{\text{Emissions tons}}{\text{year}}$$

Symbol	Name	Description	Type	Source
EF	Emission Factor g/hp/hr	The amount of an individual pollutant that will be generated per horse power hour of operation, e.g. 2.0 grams Nox generated in grams per hp per hour.	Numeric	Provided by the user or obtained from the equipment data base by the id number or model of compressor
HP (hp)	Horse power rating	The power rating of the compressor in horse power per hour	Numeric	Provided by the user or obtained from the equipment data base by the id number or model of compressor

Claim 15 (original):

The method of claim 14, wherein the primary formula is repeated for each of the following pollutants:

NOx	Nitrous Oxides	Nitrous oxide emissions	Calculated from AP-42 emission factors or manufacturers data.
CO	Carbon Monoxide	Carbon monoxide emissions	Calculated from AP-42 emission factors or manufacturers data.
SO_2	Sulfur dioxide	Sulfur dioxide emissions	Calculated from AP-42 emission factors or manufacturers data.
PA or PM_{10}	Particulates	Particulate emission from fuel combustion	Calculated from AP-42 emission factors or manufacturers data.
VOCnm	Non-methane Volatile Organic Compounds	Measurement of emissions of VOC's as tons per year.	AP-42 emission factors or manufacturers data.

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Claim 16 (original):

The method of claim 12, wherein the mathematical database includes the following primary calculation formulas for calculating hydrocarbon emissions from external combustion units:

$$\sum_{i=1 \text{ to } n} \frac{\text{mmBTUi}}{\text{hr}} \times \frac{\text{1 SCF}}{\text{Fuel Heat Value in BTU}} \times \frac{\text{EF lbs}}{\text{mmSCF}} \times \frac{\text{24 hrs}}{\text{day}} \times \frac{\text{365 days}}{\text{year}} \times \frac{\text{1 ton}}{\text{2000 lbs}} = \frac{\text{Emissions tons}}{\text{year}}$$

Symbol	Name	Description	Type	Source
EF	Emission Factor lb / mmscf	Amount of pollutant species generated per unit of fuel used or burned, e.g. lbs (pounds) per mmscf (Million standard cubic feet) of gas burned.	Numeric	Client data stored in System Database.
mmbtu	BTU rating of the unit	The size of the combustion unit as measured in BTU's per hour. Mmbtu = million British Thermal Units	Numeric	Client data stored in System Database

Claim 17 (original):

The method of claim 16, wherein the primary formula is repeated for each of the following pollutants:

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NOx	Nitrous Oxides	Nitrous oxide emissions	Calculated from AP-42 emission factors or manufacturers data.
CO	Carbon Monoxide	Carbon monoxide emissions	Calculated from AP-42 emission factors or manufacturers data.
SO_2	Sulfur dioxide	Sulfur dioxide emissions	Calculated from AP-42 emission factors or manufacturers data.
PA or PM_{10}	Particulates	Particulate emission from fuel combustion	Calculated from AP-42 emission factors or manufacturers data.
VOCnm	Non-methane Volatile Organic Compounds	Measurement of emissions of VOC's as tons per year.	AP-42 emission factors or manufacturers data.

Claim 18 (currently amended):

A method for collecting, assimilating and utilizing data from a variety of sources for determining the regulatory requirements and for generating the related compliance reports for an industry, the method comprising the steps of:

a. collecting external data required for compliance requirements of a compliance model;

b. collecting data from a user;

c. assimilating the external data and the user data in an air module mathematical database used for calculating hydrocarbon emissions from a crude oil storage tank so as to determine compliance by the user, wherein the air module mathematical database includes the following primary calculation formulas for calculating emissions for valves, flanges, piping ~~flanges piping~~ and compressor seals:

$$\sum_{i=1 \text{ to } n} \frac{EF_i lb}{hr_i} \times \frac{VOC\%_i}{1} \times \frac{24 \text{ hrs}}{\text{day}} \times \frac{365 \text{ days}}{\text{year}} \times \frac{1 \text{ ton}}{2000 \text{ lbs}} = \frac{\text{Emissions tons}}{\text{year}} ;$$

d. automatically generating a report unique to the user data containing required compliance information.

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Claim 19 (previously presented):

The method of claim 18, wherein the primary formula is repeated for each fitting in each piece of equipment:

Symbol	Name	Description	Type	Source
EF	Emission Factor	Amount of volatile organic emissions generated per fugitive component or source. E.G. lbs / hr / source	Numeric	Provided by reference from AP42 and SOCMI.
No. of components, (src)	Number of components	Actual number of each source component at the facility, e.g. 355 valves, etc.	Numeric	Provided by the user or obtained from Client data stored in System Database or equipment data stored in System Library.
VOC%	VOC Concentration in the affected stream.	The concentration of VOC (volatile organic hydrocarbon compounds) defined as any compound with C3+ hydrocarbons as identified in the gas analysis and as calculated by volume %.	Numeric	Calculated from the gas analysis for this facility.

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Claim 20 (previously presented):

The method of claim 18, wherein the mathematical database includes the primary calculation formula for calculating emissions for glycol dehydration units, wherein:

Symbol	Name	Description	Type	Source
	Unit Description	Case name and case description used to retrieve case files from the GRI program. This name will also be identified by a facility ID number and an equipment ID number.	Text	Provided by the user or taken from the facility data base as a facility name.
	Annual Hours of Operation	Number of hours the unit operates annually, e.g. 8760 hrs = 1 year.	Numeric	Input by user or user data base.
	Gas Composition	Percentages of all components in the gas stream. Individual values input separately from gas analysis.	Numeric and text	Gas analysis provided by user orr from Client data stored in System Database.
Mmscf / day	Dry gas flow rate	The volumetric flow of the sales gas stream in volumetric units per day (e.g. mmscf/day or million standard cubic feet per day).	Numeric	Production data from user or Client data stored in System Database.
lb / mmwscf	Dry gas water content	The target final concentration of water in the sales gas stream, in the USA the default value is 7.0 lb / mmscf.	Numeric	Client data stored in System Database or accepted by default.
	Absorber stages	Number of actual equilibrium stages in the contactor; may be chosen, if known, by the user as an alternative entry to the dry gas water content described above.	Numeric	Chosen by user.
	Lean TEG/ EG flow rate	The pumping rate of the lean or fresh tri-ethylene glycol (or ethylene glycol) solution in gallons per minute.	Numeric	Client data stored in System Database.
	Water content	The allowable water concentration in the lean or fresh glycol stream. A default value of 1.5% may be chosen if the user does not have this value.	Numeric	Client data stored in System Database or chosen by default.

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Symbol	Name	Description	Type	Source
	Re-circulation ratio	The gallons of glycol solution circulated per pound of water removed from the wet gas stream if known. May be chosen in place of the lean TEG/EG flow rate. Default value of 0.3 may be chosen in the program.	Numeric	Client data stored in System Database.
	Wet gas temperature	Temperature of the incoming wet gas stream in °F.	Numeric	Client data stored in System Database.
	Wet gas pressure	Pressure of the incoming wet gas stream in psig.	Numeric	Client data stored in System Database.
	Glycol pump type	May be gas driven or electric.	Text	Client data stored in System Database.
ACFM / gal	Gas driven pump volume ratio	ACFM (air cubic feet per minute) gas / gallon per minute glycol pumped (only for gas driven pumps). May choose default values of 0.03 for wet gas pressures greater than 40 psig and 0.08 for units with wet gas pressures less than 400 psig.	Numeric	Client data stored in System Database.
	Flash Tank	Yes or no question. Is a flash tank involved with this unit.	Text	Client data stored in System Database.
	Flash tank temperature	Operating temperature of the flash tank if used in °Fahrenheit (°F).	Numeric	Client data stored in System Database.
PSIG	Flash tank pressure	Operating pressure of the flash tank if used. Psig (pounds per square inch guage).	Numeric	Client data stored in System Database.
	Stripping gas option	Yes or no question. Is a gas stream used to remove the hydrocarbons from the glycol vent stream?	Text	Client data stored in System Database.
	Stripping gas flow rate	Flow rate of the stripping gas stream, scfm	Numeric	Client data stored in System Database.
	Control device option	Choose a control device as either a vent condenser or vapor incinerator, or choose no control device.	Text	Client data stored in System Database.

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Symbol	Name	Description	Type	Source
	Vent condenser temperature	Operating temperature of the vent condenser (if used) in °F	Numeric	Client data stored in System Database.
	Vent condenser pressure	Operating pressure of the vent condenser (if used) in absolute pressure, e.g. psia	Numeric	Client data stored in System Database.
	Incinerator ambient air temperature	Average ambient air temperature for the location in °F	Numeric	Selected from climatic data stored in System Library.
	Excess oxygen	% excess oxygen used in combustion process if a vapor incinerator is chosen as a control device.	Numeric	Provided by the manufacturer of the combustion unit and included in the System Library.
	Combustion efficiency	% efficiency of the vapor control incinerator unit.	Numeric	Provided by the manufacturer of the combustion unit and included in the equipment data base.
VOCs	Volatile Organic Compounds	Measurement of emissions of VOC's as tons per year from the Glycalc Program Printout in tons/year.	Numeric	Glycalc® program output.
HAPs	Hazardous Air Pollutants	Volumetric measurement of a group of air constituents that have been determined by the Environmental Protection Agency (EPA) to be considered categorically hazardous to health and the human environment. Measured in tons/year.	Numeric	Glycalc® program output or information gained from the EPA speciation program for HAP's.

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Claim 21 (currently amended):

A method for collecting, assimilating and utilizing data from a variety of sources for determining the regulatory requirements and for generating the related compliance reports for an industry, the method comprising the steps of:

a. collecting external data required for compliance requirements of a compliance model;

b. collecting data from a user;

c. assimilating the external data and the user data in an air module mathematical database used for calculating hydrocarbon emissions from a crude oil storage tank so as to determine compliance by the user, wherein the air module mathematical database includes the following primary calculation formulas for calculating flash emissions caused by the transfer of higher pressure liquids from a process vessel to a storage tank of less pressure:

$$\log R_{st} = 0.4896 - 4.916 \log \gamma_{ost} + 3.496 \log \gamma_{sp} + 1.501 \log P_{sp} - 0.9213 \log T_{sp}$$

and the Vasquez Beggs GOR Correlation.

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$$GOR = C1 \times SG100 \times (P_{str} + P_{atm})^{C2} \times e^{\frac{C3 \times {}^{\circ}API}{T_{gas}{}^{\circ}F + 460}}$$

$$SG100 = SG \times (1.0 + 5.912 \times 10^{-5} \times T_{gas}{}^{\circ}F \times \log \frac{P_{sep} + P_{atm}}{114.7}$$

Symbol	Name	Description	Type	Source
R_{st}	Stock Tank Gas Oil Ratio (GOR)	The ratio of the volume of gas generated per barrel of oil produced as a result of the pressure drop between the pressurized separator and the oil storage (stock) tank. Units = volume gas / volume oil, e.g. standard cubic feet / barrel	Numeric	Calculated by Black Oil GOR equation, 3.6.1
Γ_{ost}	Stock Tank Oil specific gravity	Measurement of the ratio of the weight of the oil relative to water at standard temperature and pressure. E.g. units = lb/gal per lb/gal or SG=6.5 lb/gal oil / 8.34 lb/gal water @STP=0.78	Numeric	Calculated using the physical data of the materials being stored

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Symbol	Name	Description	Type	Source
γ_{sp}	Separator specific gravity	Measurement of the ratio of the weight of the air relative to	Numeric	Calculated using the physical data of the gas being measured
P_{sp}	Separator pressure	The operating pressure of the vessel used to separate the oil, water and gas in the produced fluid stream	Numeric	Measured at the equipment by the user
T_{sp}	Separator temperature	The operating temperature of the separator measured in °F	Numeric	Provided by the user from field measurements
V_{MW}	Vapor Molecular Weight	The weight of one mole (or Avogadro's number of molecules) of the gas being measured.	Numeric	Determined by reference or measurement. May use default value or actual gas analysis.
C1, C2, C3	Vasquez Beggs Constants	Constants calculated for the use in this relationship using statistical empirical data. Dimensionless	Numeric	Provided by reference to the relationship based on degree API gravity range of the crude being stored.
SG	Specific Gravity of the gas	Same as γ_{sp} or separator specific gravity as described above.	Numeric	Calculated using the physical data of the gas being measured
SG100	Specific Gravity of the gas referenced to 100 psig	A calculated quantity based on the temperature and pressure measured at the separator referenced to 100 pounds per square inch gauge (psig) pressure.	Numeric	Result of equation 3.6.3
P_{str}	Pressure of the upstream fluid	Pressure of the fluid stream as it leaves the separator or the separator pressure.	Numeric	Measured in the field by the user.
P_{atm}	Atmospheric pressure	The measured pressure of ambient conditions or in the atmosphere outside the separator.	Numeric	Measured at the field location using a barometer or by default at ST&P.
T_{gas}	Gas temperature at the separator	The measured temperature of the gas stream in the separator	Numeric	Measured at the field location by the user.

Symbol	Name	Description	Type	Source
P_{sep}	Separator Pressure	The operating pressure of the separator measured in psig	Numeric	Measured at the field location by the user.
psig	Pounds per square inch gauge	Pressure measurements in units of pounds per square inch or in general units – f/l^2.	Numeric	Measured with a pressure measuring device at the equipment site.
°API	Degrees API gravity	The measured API gravity of the fluid (crude) being measured as calculated by a standard equation which ratios the specific gravity of the fluid to a referenced standard.	Numeric	Calculated using the physical data of the fluid.
°F	Degrees Fahrenheit	The standard temperature measurement using degrees Fahrenheit as a scale.	Numeric	Standard unit
log	Logarithm	Mathematical relationship which equals the exponent value that the number 10 would be raised to get that same number.	Text	Standard unit

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d. automatically generating a report unique to the user data containing required compliance information.

Claim 22 (currently amended):

A method for collecting, assimilating and utilizing data from a variety of sources for determining the regulatory requirements and for generating the related compliance reports for an industry, the method comprising the steps of:

a. collecting external data required for compliance requirements of a compliance model;

b. collecting data from a user;

c. assimilating the external data and the user data in an air module mathematical database used for calculating hydrocarbon emissions from a crude oil storage tank so as to determine compliance by the user, wherein the air module mathematical database includes the following primary calculation formulas for calculating loading loss emissions:

$$L_L = 12.46 \frac{SPM}{T}$$

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Symbol	Name	Description	Type	Source
L_L	Loading losses - VOC	The Volatile Organic Compound (VOC) emissions quantity as determined in the above equation.	Numeric	Result of equation 3.7.1
S	Saturation factor	Empirical quantity for calculation	Numeric	AP-42 reference Table 5.2-1. Stored in System Library.
P	True liquid vapor pressure of the liquid being loaded	The true vapor pressure of the liquid being loaded which is the pressure at which the liquid is in equilibrium with the overhead vapors. Measured in pounds per square inch atmospheric (psia)	Numeric	By reference from AP-42 Figures 7.1-5, 7.1-6, 7.1-2. Stored in System Library.
M	Vapor Molecular Weight	The weight per mole of gases being emitted, e.g. lb/lb mole. One mole = weight of 10^{23} molecules (Avogadro's number) of the gas or 359 standard cubic feet. (SCF)	Numeric	By reference from AP-42 Table 7.1-2. Stored in System Library.
T	Bulk Liquid Temperature	The temperature of the liquid being loaded in °R (Rankine) = °F + 460.	Numeric	Supplied from the tank calculation data.

d. automatically generating a report unique to the user data containing required compliance information.

Claim 23 (original)

The method of claim 12, wherein the mathematical database includes the following primary calculation formulas for calculating emission fees:

$$\sum \text{Emissions} \frac{\text{tons}}{\text{year}} \times \$ \text{ per ton} = \text{Annual Emissions Fee}$$

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Symbol	**Name**	**Description**	**Type**	**Source**
$	Price per ton	The dollar price per tons of emissions as established by the particular state of operation	Numeric	Established by law.
NOx	Nitrous Oxides	Nitrous oxide emissions	Numeric	Calculated
CO	Carbon Monoxide	Carbon monoxide emissions	Numeric	Calculated
SO_2	Sulfur dioxide	Sulfur dioxide emissions	Numeric	Calculated
PA or PM_{10}	Particulates	Particulate emission from fuel combustion	Numeric	Calculated
VOCs	Volatile Organic Compounds	VOC emissions	Numeric	Calculated

ARGUMENT

Specification:

The title of the specification is replaced with "Regulatory Compliance Online Management System" so that the title is more descriptive and is clearly indicative of the invention to which the claims are directed. This title is indicative of the invention to which the claims are directed because these claims are directed towards regulatory compliance requirements.

Drawings:

A label and a view number has been added to drawing 2 such that it now conforms with MPEP §1.84(u). An additional correction has also been made so now the label for Internal Combustion is now 3.2, instead of 3.7.

Claim Objections:

The examiner objected to claims 13, 14, 15, 16, 17, 19, 20, 21, 22, and 23 because the claims did not end in a period. These claims have been amended so that each of the claims now end in a period and comply with MPEP §608.01(m).

Allowable Subject Matter:

The examiner objected to claims 18-22 as being dependent upon a rejected base claim. Claims 18-22 have now been amended so that they are each written in independent form. These claims have not been narrowed or expanded in terms of coverage breadth.

35 U.S.C. §102(b):

Claims 1-23 are pending in the application. In the Office Action dated August 25, 2003, the Examiner rejected claims 1-3, 5-8, and 11 under the provisions of 35 U.S.C. §102(b), taking the position that those claims are anticipated by U.S. Patent No. 5,668,735 to Dominguez et al.

Applicant traverses these rejections and respectfully requests reconsideration and withdrawal since several of the recited limitations of Applicant's claims are neither taught nor suggested by Dominguez.

Regarding claim 1, the external data as used in this invention refers to regulatory compliance requirements, which can change immediately, without notice. These data can be obtained from many different sources, including but not limited to values posted in current EPA regulations, environmental agency internet sites, and manuals. The present invention will retrieve the most up-to-date information on the compliance requirements. These external values can be entered into the database manually or can be downloaded into the database from a particular source. However, the Dominguez invention is used to collect real time data on emissions from air streams so that the operator can correct the process immediately. The external data used in the Dominguez patent is the data collected and analyzed by gas chromatography during a certain time interval on the air stream. Thus, the external data of the Dominguez patent is not even closely similar to the external data referred to in applicant's present invention. Regarding the second element user data of claim 1, the data collected from a user in the present invention comprises of the tank size and dimensions, the tank locations, the industry the tank is being used, etcetera. The user data in this invention is then used by mathematical formulas located in modules to approximate emission levels. However, the user data entered in the Dominguez patent is used for instrument calibration. In Dominguez, data is not being entered and then subsequently calculated, but is an actual air stream with fixed compositions of certain gases. The third element of claim 1 cannot be found as being taught nor

suggested by Dominguez. This claim is unique to the Dominguez patent because no where in Dominguez is the external data and the user data assimilated in a processor to determine compliance. In Dominguez, the user data is supplied initially to obtain an external data which a user then determines whether the stream is in compliance; while in applicant's invention, the external data and user data are used together in which a mathematical processor determines compliance. Hence, since this element is not taught nor suggested by Dominguez, this claim should be acceptable, despite the other arguments. Finally, in regards to the last element of generating a report unique to the user data containing required compliance information, this invention creates reports for submittal to regulatory agencies for compliance reporting purposes. Applicant's invention's reporting includes different information as required by law than what the Dominguez report would contain. The Dominguez report is created for the operator to view so that he may analyze it and correct any problems which may arise during operation. The entire purpose and method used between the Dominguez patent and this invention is not similar and can thus not anticipate this invention. The external data, the data inputted from the user, and the reports are very different and are used for different reasons. Hence, Dominguez does not teach nor suggest applicant's invention.

Regarding claim 2, this invention can utilize the external data which happens to be public data. As mentioned before, the external data as used in this invention refers to regulatory compliance requirements. These external data may be provided from a public source. However, the Dominguez patent makes no mention of any public data being used as external data. The external data in Dominguez is the results of real-time analysis of compositions in a gas stream. The examiner cited publicly known user data, but mistakenly called it publicly known external data. As stated in Dominguez, this public data is used to calibrate the gas chromatographs, and thus is user data. As a

result, claim 2 should be in acceptable form. Also, since this claim depends from another acceptable caim, this claim should also be allowable.

Regarding claim 3, this invention utilizes a compliance model which is a government agency compliance requirement. In the Dominguez patent, the subject of this claim is mentioned in the background of the invention which just states that the EPA has compliance requirements for emissions. It is common knowledge that the EPA has these requirements, but the Dominguez patent does not gather the latest up-to-date government compliance requirements. Dominguez just analyzes a stream and an operator determines how to correct the operations. At no time are public information or government regulations inputted into the Dominguez invention for compliance calculation purposes. The Dominguez patent actually provides for continuous monitoring using gas chromatography. In the applicant's invention, the user may have external data which are government compliance requirements so that reports can be generated and submitted to the government agencies. Also, since this claim depends from another acceptable claim 1, this claim should also be acceptable.

Regarding claim 5, this invention utilizes external public data which may be industry specific. The claim was amended to depend on claim 2, instead of claim 1, since that is the claim which references public data. The Dominguez patent makes no mention of external data as being public data. Thus, the Dominguez patent makes no mention of external public data as being industry specific. The examiner refers to a cite, but mistakenly assumes that data as being external. However, that data is user data because it is used to calibrate the gas chromatography. Therefore, claim 5 should now be in acceptable form.

Regarding claim 6, the present invention uses collected user data as being facility specific. This invention utilizes specific information about a certain facility as being inputted as user data. The examiner cites a portion of Dominguez which he believes teaches or suggests this claim. The Dominguez patent states that his invention can be used for different types of industrial users. First, different types of industrial users would be industry specific, not facility specific. Facility refers to a plant or operating site. There can be two facilities that produce oil, one in Los Angeles, California and one in Houston, Texas, but be the same industry. The Dominguez patent just states that it can be used by other industries other than a printing plant. Also, the same argument of the second element of claim 1 applies to this rejection. The user data in Dominguez is used for instrument calibration, whereas the user data in the present information is inputted into a processor and is geared toward estimating emissions by entering values such as tank size, tank location, etcetera. Also, since this claim depends from another acceptable claim 1, this claim should also be acceptable. Thus, claim 6 should be allowable over the examiner's rejection.

Regarding claim 7, the present invention uses collected user data as being facility specific. This invention utilizes specific information about a certain facility as being inputted as user data. The examiner cites a portion of Dominguez which he believes teaches or suggests this claim. The Dominguez patent just states that calibration gases can be obtained with certain known compositions and can be used depending on the chemicals used in a particular industry. Dominguez then states which compositions are relevant for the printing process. The Dominguez patent does not state that different composition gases would be needed depending on the equipment type. The composition gases are dependent on the process involved. Also, the same argument of the second element of claim 1 applies to this rejection. The user data in Dominguez is used for instrument calibration, whereas the user data in the present information is inputted into a processor and is geared toward

estimating emissions by entering values such as tank size, tank location, etcetera. Also, since this claim depends from another acceptable claim 1, this claim should also be acceptable. Thus, claim 7 should be allowable over the examiner's rejection.

Regarding claim 8, the present invention uses collected user data as being location specific. This invention utilizes specific information about a certain location as being inputted as user data. The examiner cites a portion of Dominguez which he believes teaches or suggests this claim. The Dominguez patent states that his invention can be used for different types of industrial users. First, different types of industrial users would be industry specific, not location specific. Location refers to a geographic area and the plant which is sending the reports to the governmental agencies. The Dominguez patent just states that it can be used by other industries other than a printing plant. Also, the same argument of the second element of claim 1 applies to this rejection. The user data in Dominguez is used for instrument calibration, whereas the user data in the present information is inputted into a processor and is geared toward estimating emissions by entering values such as tank size, tank location, etcetera. Also, since this claim depends from another acceptable claim 1, this claim should also be acceptable. Thus, claim 8 should be allowable over the examiner's rejection.

Regarding claim 11, the claim was amended to depend on claim 2, instead of claim 1, since that is the claim which references public data. First, the Dominguez patent makes no mention of external data as being public data. Secondly, in the present invention, user inputs are used to calculate approximations of emissions and are later compared to actual regulatory limitations, the external public data, to determine compliance. A report, which is individualized and formatted per agency requirements, is generated for filing with an appropriate agency. In Dominguez, there is no comparison occurring such as in the present invention. In Dominguez, a calibration of the gas chromatograph is performed, which is then followed by an analysis of a new stream. A report is

created as to the composition of the stream so that the operator can take corrective action if the operator determines that the compositions of the process stream are not within an acceptable range. What may be an acceptable range is user driven and not necessarily regulatory driven. Also, there is not really a collected public data in the Dominguez patent as used in the present invention. In Dominguez, the collected user data is used for calibrating the instruments and not used as inputs to solely calculate emissions. The Dominguez invention uses user data, a stream with a known concentration of components, to calibrate the instruments so that a determination can be made for the actual emissions from a real-time stream. Thus, Dominguez does not import both sets of data into a mathematical processor, but instead uses a mathematical processor to take user data to calculate the external data to determine whether the concentration is within acceptable limits. Claim 11 should be allowable for the above mentioned reasons. Also, this claim is dependent upon another allowable claim 2.

35 U.S.C. §103(a):

Claims 1-23 are pending in the application. In the Office Action dated August 25, 2003, the Examiner: (1) rejected claims 4 and 23 under the provisions of 35 U.S.C. §103(a) as unpatentable over the combination of U.S. Patent No. 5,668,735 to Dominguez et al. as applied to claims 1-3, 5-8, and 11 and in view of U.S. Patent No. 6,557,009 to Singer et al.; (2) rejected claims 9 and 10 under the provisions of 35 U.S.C. §103(a) as unpatentable over the combination of the Dominguez et al. patent as applied to claims 1-3, 5-8, and 11 in view of U.S. Patent No. 6,341,287 to Sziklai et al.; (3) rejected claims 12 and 13 under the provisions of 35 U.S.C. §103(a) as unpatentable over the combination of the Dominguez et al. patent as applied to claims 1-3, 5-8, and 11 in view of U.S. Patent No. 4,553,983 to Baker; (4) rejected claims 14 and 15 under the provisions of 35 U.S.C. §103(a) as unpatentable over the combination of the Dominguez et al. patent in view of the Baker

patent as applied to claims 12-13 and further in view of U.S. Patent No. 6,227,177 to Yamafuji et al.; (5) rejected claims 16 and 17 under the provisions of 35 U.S.C. §103(a) as unpatentable over the combination of the Dominguez et al. patent in view of the Baker patent as applied to claims 12-13 and further in view of U.S. Patent No. 4,198,287 to Hemler, Jr. et al.; and (6) rejected claim 23 under the provisions of 35 U.S.C. §103(a) as unpatentable over the combination of the Dominguez et al. patent as applied to claims 1-3, 5-8, and 11 in view of U.S. Patent No. 6,234,390 to Rabe.

Claim 4 is a dependent claim based on claim 1. The Singer patent does teach the electronic submittal of reports to a relevant agency for compliance. However, these reports in the Singer patent are manually inputted and are not automatically generated as in the present invention. The reports in Dominguez are automatically generated, but are not the type of reports as used in this invention – for regulatory agency requirements. Hence, this invention is unique in that the reports are automatically generated for electronic submittal to regulatory agencies for environmental compliance. As discussed above, the reports in Dominguez are not generated for submittal to regulatory agencies, but are used to analyze real-time air compositions so that the operator can determine whether the stream is within regulatory compliance. The independent claim 1 has already been shown that it is not anticipated by Dominguez. Each of the four elements of claim 1 in the present invention has been distinguished from Dominguez, especially element three. The Dominguez patent generates a report in which the operator determines compliance, either by regulatory agency compliance or the possibly stricter corporation's compliance requirements. The present invention involves external data and user data be assimilated in a processor in order to determine compliance. Thus, claim 4 should be in allowable form without any amendments.

Regarding claim 23, the Singer patent calculates permit fees, not emission fees as in the present invention. Also, claim 23 is dependent on claim 12, which is dependent on claim 11, which

is dependent on claim 1. Claim 1 has already been shown that it is not anticipated or suggested by the Dominguez patent. For these reasons, claim 23 should be in allowable form without any amendments.

Regarding claim 9, the claim was amended to depend on claim 2, instead of claim 1, since that is the claim which references public data. Sziklai teaches the step of creating a library of available data from the collected public data, but does not teach the step of creating a library of available data from non-confidential portions of the collected user data. Similarly, Dominguez does not teach the creation of a library of collected user data; but instead, Dominguez creates a library of external data, which is actually stream composition values. Also, claim 9 is now dependent on claim 2, which is dependent on claim 1. Claim 1 has already been shown that it is not anticipated or suggested by the Dominguez patent. For these reasons, claim 9 should be in allowable form without any additional amendments.

Regarding claim 10, the claim was amended to depend on claim 2, instead of claim 1, since that is the claim which references public data. Sziklai teaches the posting of regulatory changes on a database by use of Artificial Intelligence. However, neither Dominguez nor Sziklai automatically compare results with library values; nor do they create unique reports according to the user data input information for regulatory compliance reporting. Also, claim 10 is now dependent on claim 2, which is dependent on claim 1. Claim 1 has already been shown that it is not anticipated or suggested by the Dominguez patent. For these reasons, claim 10 should be in allowable form without any additional amendments.

Regarding claim 12, it would not have been obvious to place a step of calculating hydrocarbon emissions from a crude oil storage tank despite the teachings of Baker and Dominguez

for several reasons. First, the applications are completely different. Baker uses the method of calculation for solvent recovery, and not so much as for agency regulation reporting. The method of calculation in Baker is very simplistic and is not an adequate method for agency regulation calculations. Baker provides no formulas or algorithms for calculation purposes. Baker assumes that air streams arising from petroleum storage tanks contain approximately 0.2 vol. % hydrocarbon; i.e., 25% of the lower explosion limit (LEL). This assumption is made in lieu of calculation, and is done for ease. Also, claim 12 is dependent on claim 11, which is now dependent on claim 2, which is dependent on claim 1. Claim 1 has already been shown that it is not anticipated or suggested by the Dominguez patent. For these reasons, claim 12 should be in allowable form without any amendments.

Regarding claim 13, the same argument made in regards for claim 12 applies to claim 13. Claim 13 should be in allowable form without any amendments.

Regarding claim 14, it would not have been obvious to include the primary calculation formulas for calculating hydrocarbon emissions from internal combustion engines within the mathematical database of an air module despite the teachings of Yamafuji, Baker and Dominguez for several reasons. First, Yamafuji teaches a method for controlling an air/fuel ratio of an internal combustion engine. Yamafuji does not provide a method for calculating the hydrocarbon emissions from an internal combustion engine. Yamafuji does not provide an acceptable method to quantify, even by estimation, the hydrocarbon emissions. In fact, there is a continuous actual measurement which is performed which the patent uses to adjust the flow rates, but not a calculative estimate of hydrocarbons as in the present invention. These formulas are not taught by Yamafuji. Also, claim 14 is dependent on claim 12, which is dependent on claim 11, which is now dependent on claim 2, which is dependent on claim 1. Claim 1 has

already been shown that it is not anticipated or suggested by the Dominguez patent. For these reasons, claim 14 should be in allowable form without any amendments.

Regarding claim 15, it would not have been obvious to include a primary formula which is repeated for calculating emissions of Nox, CO, SO_2, PA or PM_{10}, and VOCnm despite the teachings of Yamafuji, Baker and Dominguez for several reasons. First, since claim 14 is not obvious because Yamafuji does not teach a method of calculating/quantifying the hydrocarbon emissions by an estimative method, it is irrelevant that Dominguez mentions that other organic compounds can be monitored for emissions. Dominguez does not list these compound, but just states a broad statement as to other organic compounds. Also, claim 15 is dependent on claim 14, which is dependent on claim 12, which is dependent on claim 11, which is now dependent on claim 2, which is dependent on claim 1. Claim 1 has already been shown that it is not anticipated or suggested by the Dominguez patent. For these reasons, claim 14 should be in allowable form without any amendments.

Regarding claim 16, it would not have been obvious to include the primary calculation formulas for calculating hydrocarbon emissions from external combustion units within the mathematical database of an air module despite the teachings of Hemler Jr., Baker and Dominguez for several reasons. First, Hemler Jr. does not teach a method as to how to calculate/estimate gas concentrations of CO, O_2, and CO_2, but simply states that there are methods known and used in the art to determine these concentrations by taking samples and analyzing them. Hemler Jr. lists the Orsat method, gas chromatography, mass, spectroscopy, and opacity measurements as ways to determine the hydrocarbon concentrations. These measurements are made in the Hemler Jr. patent so that the operator can determine whether the gas can be released into the atmosphere. Hence, these measurements are real-time and not

estimates as in this invention. These estimative formulas are not taught by Hemler Jr. Also, claim 16 is dependent on claim 12, which is dependent on claim 11, which is now dependent on claim 2, which is dependent on claim 1. Claim 1 has already been shown that it is not anticipated or suggested by the Dominguez patent. For these reasons, claim 16 should be in allowable form without any amendments.

Regarding claim 17, it would not have been obvious to include a primary formula which is repeated for calculating emissions of Nox, CO, SO_2, PA or PM_{10}, and VOCnm despite the teachings of Hemler Jr., Baker and Dominguez for several reasons. First, since claim 16 is not obvious because Hemler Jr. does not teach a method of calculating/quantifying the hydrocarbon emissions by an estimative formula, it is irrelevant that Dominguez mentions that other organic compounds can be monitored for emissions. Dominguez does not list these compound, but just states a broad statement as to other organic compounds. Also, claim 17 is dependent on claim 16, which is dependent on claim 12, which is dependent on claim 11, which is now dependent on claim 2, which is dependent on claim 1. Claim 1 has already been shown that it is not anticipated or suggested by the Dominguez patent. For these reasons, claim 17 should be in allowable form without any amendments.

Regarding claim 23, it would not have been obvious to include a primary calculation formula for calculating emission fees despite the teachings of Rabe and Dominguez for several reasons. First, Rabe utilizes real-time emission sensors which determine the amount of pollutants, calculates fees, and debits a chip card the amount of money penalized for emissions in a combustion engine. The chip card already has money credits in there. The Rabe invention is geared towards mainly internal combustion engines of motor vehicles., while the present invention calculates all fees owed for emissions in multiple types of uses. Rabe is non-analogous

prior art. "In order to rely on a reference as a basis for rejection of an applicant's invention, the reference must either be in the field of applicant's endeavor or, if not, then be reasonably pertinent to the particular problem with which the inventor was concerned." In *re Oetiker*, 977 F.2d 1443,1446, 24 USPQ2d 1443, 1445 (Fed Cir. 1992). Rabe is neither in the field of automatically generating agency compliance reports, nor is it reasonably pertinent to the particular problem with which the Applicant's invention is concerned. Also, claim 23 is dependent on claim 12, which is dependent on claim 11, which is now dependent on claim 2, which is dependent on claim 1. Claim 1 has already been shown that it is not anticipated or suggested by the Dominguez patent. For these reasons, claim 23 should be in allowable form without any amendments.